Information Requirements Study

of the Decision Making / Problem Solving Processes in Support

# of Safety Oversight of FAR Part 121 Air Carriers

Gerald P. Chubb and Chang Liu, The Ohio State University

Robert J. B. Hutton, David B. Malek, and Erica L. Rall, Klein Associates

ABSTRACT

Technology enhancements and an aging aircraft fleet require inspectors to expand their knowledge base, understand new methods and techniques for assuring airworthiness, and adopt work strategies that improve their efficiency and effectiveness as problem solvers and decision makers. FAA Aviation Safety Inspectors (ASIs), their supervisors, and their managersí diverse background of education and work experience is being described to establish a baseline for instructional system development and provide better decision support systems (DSS).

This study focused on coming to a better understanding of what Principal Inspectors and those who support them do, how they do it, and where they could possibly benefit from performance aids / analysis tools of various kinds. Techniques developed to study decision making in other operational contexts (military and civilian) were adapted to the problems encountered by FAA inspectors in the normal performance of their daily tasks. Particular emphasis was placed on identifying areas where judgments, decisions, and problem solving strategies must be used by inspectors and influenced flight safety. Both individual and team activities were examined.

A Preliminary Cognitive Task Analyses (CTA) examined the nature of the inspectorís assigned duties and responsibilities using the Critical Decision Method (CDM), a kind of structured interview technique. The preliminary CTA data were then validated by repeating this study at other Certificate Management Offices (CMOs). In the course of these interviews, a number of best practices were identified, as well as establishing the nature of the cognitive tasks inspectors perform. A set of seven Decision Requirements Tables (DRTs) were developed from these interviews, capturing particularly rich incidents reported by various inspectors. These form the basis for understanding the kinds of DSS requirements inspectors have in the performance of Part 121 oversight. Both PTRS and ATOS carriers were included in the sample. Additional carriers and task areas will be included as work continues.